VOLUME 20
Materialien zur Konsumforschung

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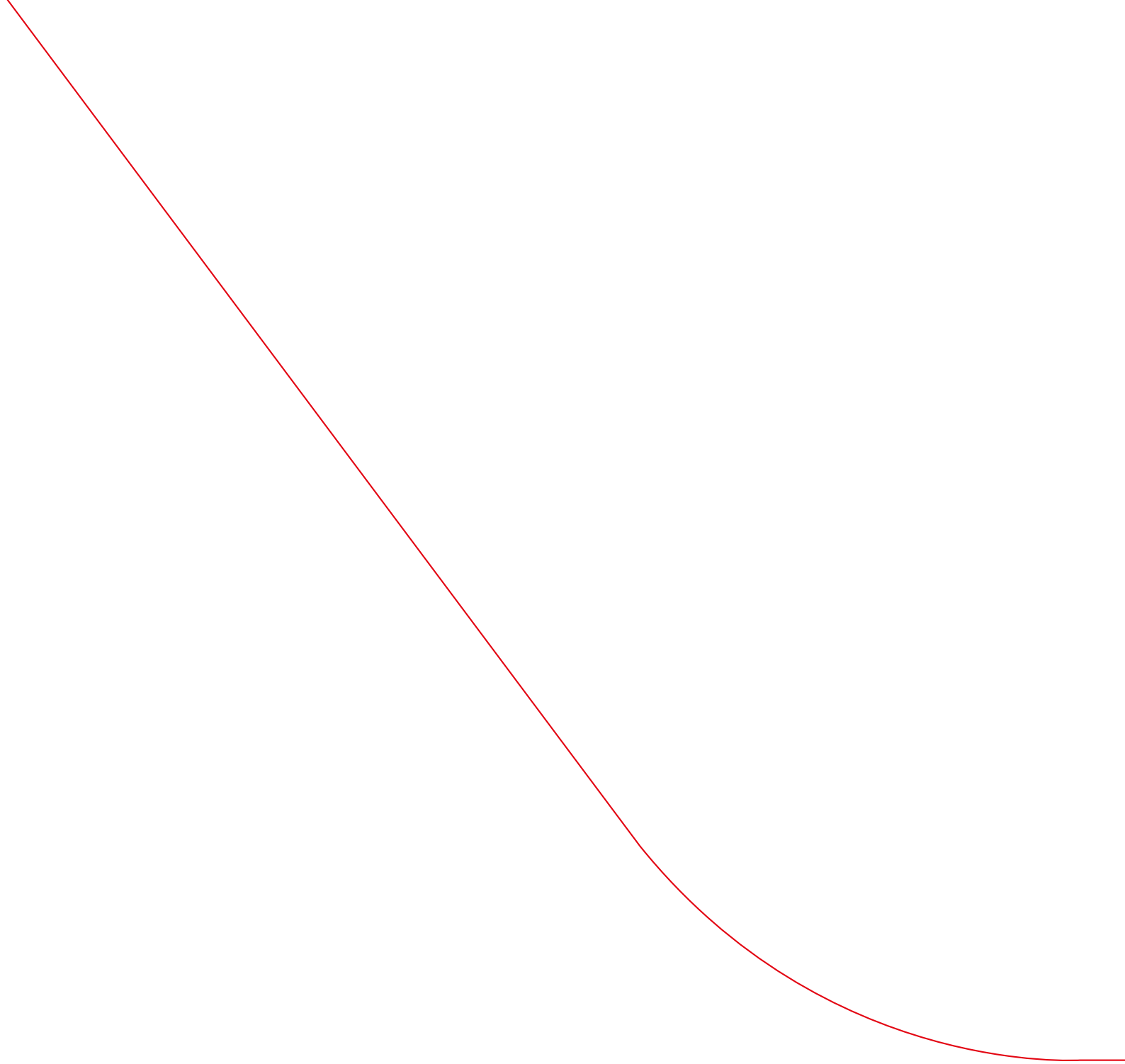
ADDICT

Addictive Design in Digital Consumer Technologies

INSTITUTE FOR ADVANCED STUDIES VIENNA

AK WIEN



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Summary

Addictive design strategies – such as feeds that enable infinite scrolling, autoplay of content, advertisements, or push notifications that prompt immediate action through artificially generated urgency – are associated with compulsive and addiction-like patterns of use. Such patterns can negatively affect users' health, productivity, and overall quality of life. Despite growing awareness of these risks, which disproportionately affect children and adolescents, regulatory measures remain limited.

The aim of the ADDICT research project is to foreground the business strategies of platform companies as well as their design practices that are deliberately oriented toward fostering compulsive user behavior. The research question is: "How can social media platforms be assessed and categorized based on their addictive risks?" This question is addressed through (1) the systematic identification and classification of risks associated with addictive design features and processes on digital platforms, and (2) the development of a risk taxonomy that enables public authorities to assess addiction-promoting design practices and processes and to counteract them through regulatory measures. Finally, two case studies of TikTok and Instagram are conducted to illustrate how social media platforms popular among adolescents can be systematically classified according to the risk posed by their addictive design elements.

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1 Problem Statement

Digital platforms have now infiltrated nearly every aspect of people's daily lives, a process described as "platformisation" (Poell et al., 2019). Platforms not only fundamentally shape everyday practices through computational architectures, economic marketplaces, and governmental frameworks (Poell et al., 2021), but also increasingly affect people's well-being. Practices like doomscrolling, habitually checking one's phone, and reported loss of control over platform use (Mujica et al., 2022; Neyman, 2017; Woodward et al., 2025) have sparked widespread concerns about digital addiction and problematic internet use (American Psychiatric Association, 2013; Fineberg et al., 2018). Substantial investigations from researchers and governments have identified **excessive internet use as a major public health issue**, especially among minors and adolescents (Bhargava & Velasquez, 2021; Bickham, 2021; Boniel-Nissim et al., 2024; Tunc-Aksan & Akbay, 2019). While policy strategies addressing excessive online behaviour have traditionally focused on online gaming and gambling addictions, concerns about addictive social media use have gained increasing attention in recent years (Capraro et al., 2025).

A recent report from the World Health Organization (WHO) encompassing Europe demonstrates that 11% of adolescents reported problematic social media use, marking a significant increase of 4% between 2018 and 2022 (Boniel-Nissim et al., 2024). Similarly, the European School Survey Project on Alcohol and Other Drugs (ESPAD) 2024 report reveals that nearly 80% of surveyed Austrian students aged between 15 and 16 years feel they spend too much time on social media, perceiving it as a greater issue than gambling or digital gaming. Notably, 10% of surveyed students in Austria showed indications of problematic social media use (Strizek et al., 2024). For this reason, medical experts, including psychiatry professor Nassir Ghaemi, advocate for clinical recommendations to incorporate restrictions on the use of social media (Ghaemi, 2020). While such recommendations are well-intentioned, they ultimately redirect attention from the structural dynamics of social media platforms to the behaviour of individual users.

1.1 Addictive User Behaviour as a Business Strategy

Addictive behaviour in the context of digital platforms is frequently classified as individual mental and behavioural disorders within clinical, psychological and medical discourses (Helm & Matzner, 2024; Moretta & Wegmann, 2025), which, to some extent, implies shifting the focus of the problem on individual users. This is particularly relevant with regard to adolescents and young adults, who are among the most active users of online platforms, contributing to higher prevalence rates of **"internet use disorders"** in these age groups (European Parliament, 2019). In medical classification systems – such as the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (American Psychiatric Association, 2013) and the International Classification of Diseases, 11th revision –, addictive behaviours are formally recognised as disorders based on criteria such as withdrawal tolerance, loss of control, increase in priority, and continuation/escalation (World Health Organization, 2022). Internet use disorder, compared to substance-related addictions, is often characterised by distinct features including preferring

online social interaction over in-person contact, experiencing fear of missing out (FoMO), and sensitivity to social reward systems, e.g. receiving "likes" (Moretta & Wegmann, 2025). Framing such behaviours primarily as individual health issues under the diagnostic label of "internet use disorder", however, risks overlooking the broader impacts digital environments have on society at large and the political and economic power exerted by platform companies (Bhargava & Velasquez, 2021; Matzner, 2024; Susser et al., 2018; Williams, 2018). In fact, drawing from design and human-computer interactions (HCI) studies, digital interfaces and algorithms are intentionally designed to maximize user engagement by **stimulating compulsive behaviour patterns** (Eyal, 2019; Schüll, 2014; Williams, 2018). Furthermore, these design strategies are purposefully leveraging people's socio-emotional vulnerabilities and psychological mechanisms, such as FoMO, through manufactured urgency and scarcity, and habit-formation mechanisms such as intermittent reinforcement (Eyal, 2012; Tunc-Aksan & Akbay, 2019). Thus, to maximise attention and engagement, platforms are intentionally engineered to foster compulsive habits and addictive patterns of use (Bhargava & Velasquez, 2021; Williams, 2018).

These cognitive and behaviour changing strategies are deeply **embedded in the business models** of platform companies, contributing to their profit making and capital valorisation (Langley & Leyshon, 2017). Due to network effects, the more users join and engage, the more data created, and the more valuable these platforms become (Katz & Shapiro, 1985; Srnicek, 2016; Zuboff, 2019). User attention, time, engagement, and addiction are exploited as implicit digital labour (Fuchs, 2015) and commodified into personal and behavioural data to sell targeted advertising and generate substantial profits (Couldry & Mejias, 2019; Gerlitz & Helmond, 2013). Along this capitalistic logic of platform economy (Srnicek, 2016) and **attention economy** (Williams, 2018), it is therefore crucial to highlight that these behavioural effects are not incidental, but rather a strategic feature for economic interests (Helm & Matzner, 2024). Addictive behaviour thus emerges from cognitive manipulations implemented by tech companies to increase monetisation, disguised as intuitive interfaces and personalised experiences (Bucher, 2018; Stanfill, 2015). In this sense, structural regulation becomes crucial in challenging the prevailing narrative and addressing the systematic power asymmetries between individual users and platform companies, ensuring that citizens are protected from exploitative practices. This is particularly relevant, since the excessive use of digital technologies poses significant public health challenges impacting mental wellbeing, emotional regulation, and social functioning.

1.2 Addictive User Behaviour as Public Health Issue

The relationship between social media use and public health is complex and platform-specific, with some platforms even having positive effects (Woodward et al., 2025). In general, social media developed into an important source for accessing information and finding support on health issues, especially mental health, and can support formation of social connection and identity development (Nagata et al., 2024; Wiesböck, 2025). However, a variety of scientific evidence suggests a detrimental relationship between social media use and mental health outcomes. For example, research suggests that individuals with high screen time exhibit

psychological characteristics such as **low self-esteem, impulsivity**, boredom proneness, and alexithymia, i.e., difficulty in identifying and expressing emotions (Feher et al., 2023). Addictive online behaviour is associated with **sleep disturbances**, such as poor sleep quality, insomnia, and excessive daytime sleepiness, often exacerbated by blue light exposure from screens (Dresp-Langley & Hutt, 2022). Furthermore, growing attention is paid to the constant availability of digital platforms fostering an environment where users experience **heightened stress, cognitive overload**, and difficulty disengaging from online content, which can exacerbate anxiety and mood instability (Feher et al., 2023).

Additionally, excessive use of digital technologies has been associated with a range of physical health issues, including **headaches, postural problems**, and **obesity** due to prolonged sedentary (Feher et al., 2023), as well as to the prevalence of marketing of unhealthy and high-caloric food products to children on social media, which the WHO has unequivocally linked to children's eating preferences, consumption requests, purchasing decisions, and eating behaviours (Tatlow-Golden et al., 2021; World Health Organization, 2010). Beyond that, problematic internet use impacts social well-being, contributing to impaired socialisation and **difficulties in interpersonal relationships**, especially for children and young adults (Feher et al., 2023). Studies suggest that excessive screen time can lead to withdrawal from real-life social interactions, weakening parent-child relationships, and reducing engagement in offline activities (World Health Organization, 2015). Academic and occupational consequences are also significant in some studies, with individuals experiencing **reduced productivity**, impaired concentration, and poor academic performance, ultimately jeopardizing career opportunities (Boniel-Nissim et al., 2024). Lastly, research suggests that high internet use can be linked to risky behaviours, such as **substance use** (Boniel-Nissim et al., 2022).

Due to their developmental stage, **adolescents** are **more vulnerable** to addictive behaviours. The WHO report concludes that a growing number of adolescents are developing addiction-like symptoms, such as difficulty controlling compulsions, distress upon restriction, and preoccupation when offline (Boniel-Nissim et al., 2024). Potential effects further include negative impacts on social development, mental health – including **depression, anxiety, social phobia,** and even suicidal ideation (Theopilus et al., 2024). Studies further suggest a significant association between increased use of modern digital media of adolescents and the development of **ADHD symptoms** (Ra et al., 2018), as well as challenges regarding **sleep** patterns, particularly late sleep onset (Scott et al., 2019). There is clear evidence for an association between social media use and **depressive symptoms** in adolescents (Ghaemi, 2020). Findings show that already depressed persons are more likely to show addictive user behaviour on social media platforms (Meynadier et al., 2025), there is also evidence that reducing social media use can improve symptoms in depressed adolescents (Hunt et al., 2018).

Moreover, research on problematic media use show that children and adolescents from less privileged socio-economic backgrounds and **lower-income households** are especially at risk. Studies conclude that screen time, frequency of use, and engagement rates are closely linked to the socio-economic background of a child (Lee et al., 2022; Männikkö et al., 2020; Nagata et al., 2022). This heightened vulnerability is linked to their greater amount of screen time compared to

peers, as well as a reduced capacity to engage with social media in a self-regulated or protective way (House of Commons Education Commitee, 2024). Beyond low income, research indicates that children in families experiencing financial difficulties, those with disabilities, mental health issues, or special educational needs experience **more negative effects on their wellbeing** from high screen time (ibid).

Lastly, studies suggest that the connection between young adults' online activity and **self-harming or suicidal behaviour** is shaped by mediating factors like internet addiction, prolonged screen time, and exposure to explicit material (Marchant et al., 2017). While findings indicate beneficial effects on self-harming youth through internet use – such as access to peer support and advice on harm prevention and formal treatment –, they also point to negative effects arising from exposure to explicit content – such as depictions of harm, discussions of suicidal ideations, plans, or methods of concealment (Biernesser et al., 2020; Dyson et al., 2016; Marchant et al., 2017; Memon et al., 2018). In this regard, features such as hashtags, recommendations, and algorithms are crucial in the distribution and amplification of self-harm and suicide-related content, which can lead to normalisation and contagion in vulnerable young adults (Arendt et al., 2019; Tørmoen et al., 2023). This also applies to self-harm in the context of eating disorders, which are shaped by processes of social comparison, thin idealisation, and self-objectification (Dane & Bhatia, 2023). For example, on social media platforms such as Instagram, eating disorders as well as unhealthy diets, exercise, and purgative practices are promoted through communities organised around hashtags such as "#pro-ana" and "#pro-mia" (González, 2023).

Taken altogether, addictive design and compulsive patterns of use do not only affect individual well-being but also generate broader societal and economic costs. Such disruptive effects and social implications are potentially obscured by the neoliberal discourses of individual responsibility ("digital detox"), shifting the responsibility onto individual users (Syvertsen, 2020). Consequently, protective measures should not rely on minors' individual restraint and self-regulation – at precisely the age when these capacities are still developing –, but instead be grounded in digital consumer protection, particularly for children and adolescents who are systematically targeted by engagement-driven platforms.

2 Study Design: Data and Methods

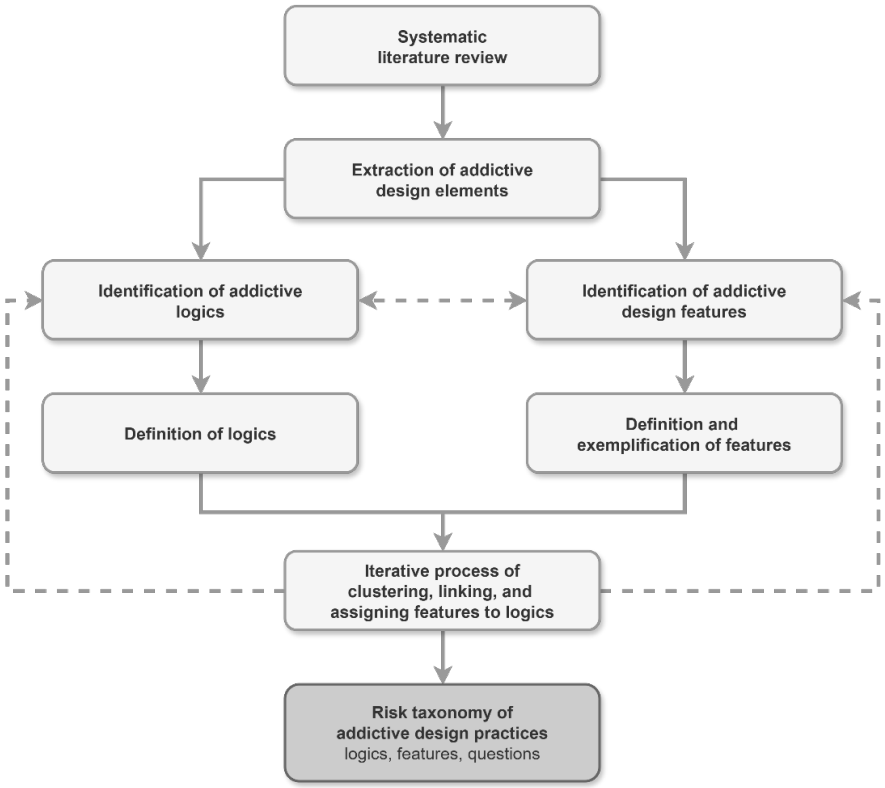
To examine the potential risks of addictive design strategies employed by platform companies, the ADDICT project addresses the following research question: **"How can social media platforms be assessed and categorised based on their addictive risks?"**

Given the prominent dominance of social media in the digital ecosystem and their pervasive influence on everyday life in the European Union (Eurostat, 2025a), the study lays a particular emphasis on social media platforms, as they stand out for their scale, social interactivity, and

psychological impact, particularly on young users (Al-Samarraie et al., 2022).[1] According to Eurostat (2025b), 88% of European youth used social networks in 2024, compared to 65% of the total population, underscoring their massive engagement and exposure to addictive design features on social media platforms. In general, social media addiction has long been recognised as a growing concern across disciplines (Bhargava & Velasquez, 2021; Cao et al., 2020; Leung & Chen, 2021; Sun & Zhang, 2021). Therefore, focusing on social media platforms allows for a targeted and socially relevant assessment of digital addiction risk in the context of European youth. Within this framework, the project primarily examines design features and logics of the most popular social media mobile platforms for this group, namely **TikTok, Instagram, Snapchat, and YouTube**. While studies indicate that WhatsApp and Microsoft Teams are also widely used (Austrian Safer Internet Centre, 2025), such apps were not included in the analysis, since they primarily serve as communication tools for private messaging and education collaboration among youth.

To answer the research question, the study applied the following methodological approach.

Figure 1: Taxonomy Development Process



[1] While various types of digital platforms employ addictive design strategies – including e-commerce platforms, online TV streaming platforms, and generative AI platforms (Flayelle et al., 2023) – and addictive design relies on similar underlying logics across platforms, its concrete manifestations differ by platform purpose, with certain techniques occurring only in specific platform categories.

2.1 Identification and Classification of Addictive Features and Logics

In the first step, existing literature in related fields was systematically reviewed to identify design elements that promote addictive behaviours on digital platforms. In methodological terms, a systematic literature review seeks to include "all published evidence on a topic" and systematically orders and synthesizes them (Lame, 2019). The review contributes to evaluating work published to this date, brings together topics within the particular context of addictive design features, and addresses various conceptualisations across disciplines, such as psychology, behavioural economics, HCI.

The dataset for literature review was collected from major academic databases including Scopus and Google Scholar, using key search terms such as "addictive design", "digital addiction", "dark patterns", "choice architecture", and "persuasive design" (see full keyword list in Appendix 1). The initial search yielded 219 sources, comprising academic literature reviews, empirical studies, and conceptual contributions on addictive design and related concepts across various disciplines, supplemented by relevant reports and blog posts that offered practical insights. During the further iterative processes of taxonomy development, additional papers were integrated, resulting in a final dataset of **270 sources**.

The reviewed literature spans disciplines across Sociology, Media Studies, HCI, Information Science, Communication Science, Platform Studies, Game Studies, labo, and Psychology, allowing for a full capture of both technical mechanisms and their social, economic, and behavioural impacts. The dataset covers the period **from 1998 to 2025**. The starting point, 1998, marks the introduction of the concept of persuasive design by B.J. Fogg (1998), laying the theoretical foundation for subsequent research in this field. The endpoint, 2025, represents the current state of research, ensuring that the review is up to date. The focus – about three quarters of the total sample – is placed on studies from 2010 onward, as this period marks the rise of social media platforms such as Instagram, which significantly expanded the application and impact of persuasive design. The time period further coincided with the emergence of the term "dark patterns" linking persuasive design (features) to problematic usage patterns (Brignull, 2011), later followed by "addictive design" carving out its critical relation to attention seeking interface design as business strategy (Neyman, 2017). The resulting dataset was subsequently used to identify related design elements that reinforce addictive user behaviours as well as informing the conceptual, empirical and practical understanding of additional addiction-promoting practices on digital platforms.

2.2 Development of a Taxonomy of Risks

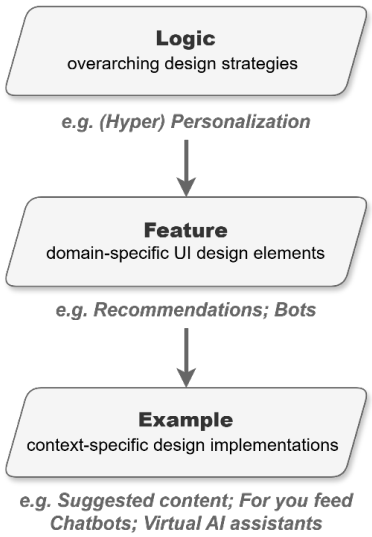
In the second step, a systematic taxonomy development method was applied (Nickerson et al., 2013) based on a three-level model that includes conceptual, empirical, and operational levels (Bailey, 1984). The purpose of the taxonomy is to practically identify elements that contribute to addictive design on digital platforms. The expected users and applicants of the taxonomy are experts and policymakers in the field of consumer protection.

In the first iteration, we applied a "conceptual-to-empirical" approach (Nickerson et al. 2013), a deductive approach that identifies dimensions and characteristics derived from conceptual or theoretical foundations and applies them to empirical cases. Drawing from prior literature, a three-level ontology of high-level, meso-level, and low-level elements (Beltrán, 2025; Gray et al., 2024) was adopted, which was used to classify dark or addictive patterns. This structural framework captures concrete design choices, enabling "regulators and supervision authorities to target specific types of addictive patterns and develop more effective interventions" (Beltrán, 2025, p. 315). Accordingly, an adapted hierarchical taxonomy framework was applied to categorize the collected design elements into three dimensions that foster addictive user behaviours on digital platforms:

1. **Logics, overarching design strategies employed by platforms,**
2. **Features, domain-specific design elements on the interface level, and**
3. **Examples, context-specific design implementations.**

Additional operational indicators were introduced to assess the design elements in practice.

Figure 2: Three-Layer Taxonomy Framework



In the second iteration, an "empirical-to-conceptual" approach (Nickerson et al., 2013) was followed, which is an inductive approach to cluster empirical data and conceptualize the nature of each cluster. A comprehensive list of **125 related design elements** was first extracted from the reviewed papers and examined according to their linkages to the overarching logics and concrete features. Elements of features were clustered and classified into domain-level features and context-specific instances. The logics were then revisited and refined through iterative classification to ensure internal consistency and conceptual clarity. Additional addictive design elements were identified in newly discovered papers during the process. This recursive classification alternating between features and logics was carried out through perpetual analyses and discussions within the project team.

Based on these two iterations, an initial structural taxonomy was developed, linking logics with features in a first-round iteration table. Since blurred boundaries and definition of elements were observed, further refinement was required. Features and sub-features were reclassified, regrouped under emerging logics, and readjusted to reduce conceptual overlap. Through iterative clustering, categorisation, and conceptualisation (Nickerson et al., 2013) under continuous group review, a second-round iteration table was established, mapping refined linkages between features and both previously defined and newly emerging logics. Ultimately, 8 overarching logics with 28 features and their corresponding examples were identified from 38 papers.

Since influencers are not peripheral to addictive design but core extensions of it, we added an additional addiction-promoting element, namely how platform design incentivizes content creation and monetisation. Influential creators inherit an intermediary role between users and platform companies, as they strategically create engaging content and promote brands and products, mediating between audience, advertisers, and platforms (Abidin, 2016; Stoldt et al., 2019). As such, **social media influencers** are central actors of the attention economy that reinforce addictive-generating engagement. The same interface features and algorithmic logics on platforms that drive engagement optimisation also govern how influencers become visible and how advertisements are presented, making content production and commercial targeting structurally inseparable from platform design. A taxonomy of addictive design logics must therefore include the relationship between platform infrastructure and content-driven practices. While content itself follows dynamics that a taxonomy cannot fully capture, examining how platform design incentivizes creation and shapes engagement reveals relational mechanisms that contribute to habit formation in digital environments. Therewith, the taxonomy comprehends **9 overarching logics with 29 features**.

2.2.1 Exclusion Criteria

In accordance with the project scope, particular exclusion criteria of addictive design components in the taxonomy were applied. Deceptive or addiction-promoting features and logics without practical links with the most popular social media platforms, such as game-like rewards (Andrade et al., 2016) or other dark patterns (Brignull, 2023), were not included in the taxonomy, while recognizing their salience in the academic work. Design features and examples operating in accordance with the gamification mechanism (Andrade et al., 2016), including leaderboards and levels (Hajarian et al., 2019) as ranking indicators, were omitted as they are currently found exclusively on the professional networking platform LinkedIn, which is not intended for use by children, or on the originally community-driven platform Reddit. Moreover, certain addiction-promoting features and examples identified in the literature, including sticky content (Granda et al., 2025) and posting/playing by appointment (Flayelle et al., 2023; Zagal et al., 2013), were found mainly on less popular social media platforms among European youth such as Facebook, WeChat, and BeReal. While these elements were outside the scope of the current project focus, their presence on other platforms and the rapid pace of interface change suggest that they warrant attention in future investigations.

2.2.2 Risk Rating

A risk assessment constitutes a systematic instrument for the identification and evaluation of risks. It is based on an analysis of a risk's magnitude, its probability of occurrence, and its potential impact. The outcomes of the assessment provide the basis for risk management by assigning risks to specific risk categories and deriving appropriate management strategies such as prohibition, restriction, or warning. In order to assess social media platforms based on their addictive risks, the ADDICT project proposes a **traffic light system**. Most existing literature on taxonomy evaluation provides limited benchmarking systems (Mildner et al., 2023; Szopinski et al., 2019), while scholarship on risk assessment primarily employs quantitative and probabilistic approaches that rely on numerical evaluation to different levels of risk (Maniasi et al., 2006; Zio, 2018). However, quantitative approaches are not always feasible or suitable, particularly when there is insufficient information about the system or a lack of empirical and experimental data. In the context of emerging technologies or rapidly evolving fields like digital platforms and their ever-changing features, empirical data or user experience records are scarce and limited to specific applications related to addictive risks (Rausand, 2011; Tiusanen, 2017). **Qualitative risk analysis**, thereby, becomes especially valuable, enabling the identification of undefined or poorly understood risks and allowing for a more interpretive assessment of potential vulnerabilities.

Table 1. Operationalisation of Risk Matrix: Mitigation Difficulty and Probability

			Low likelihood & low mitigation effort; low exposure	**Medium likelihood & medium mitigation effort, requires time, effort, and/or knowledge; partial or conditional exposure**	**High likelihood & high mitigation effort or impossible to mitigate; permanent exposure**
Logics	**Features**	**Questions**	Feature is not present or is turned off by default	Feature is present by default but is not a core feature / is not on the main page, and/or can be turned off	Feature is present by default and is a core feature / is on the main page and/or cannot be turned off

In this project, a qualitative risk assessment method is adopted, since there is no prior empirical basis for calculating the risks of addictive design features in numerical terms. We draw from Graves' (2000) model, focusing on the probability of occurrence of an addiction promoting feature, and the intervention difficulty of mitigating the effects of the feature. As a means of visualizing the risk assessment, this project employs a traffic-light system to classify the risk

associated with individual features. Features assigned to the green-light category are absent by default i.e., users are not exposed to them and therefore pose a low identifiable risk of addiction. The yellow-light category indicates partial or conditional presence of a feature translating into partial or conditional exposure, which carries a potential risk of addiction that can be mitigated by user action (e.g. disabling the feature in settings or using available alternatives). Features in the red-light category are considered high-risk, as they are present and cannot be avoided or mitigated by the user, making users continuously exposed to them.

2.3 Application of Taxonomy to Two Case Studies

The final step is intended to validate the taxonomy and illustrate how social media platforms can be categorised according to their level of risk related to addictive design. This "design science evaluation phase" (Nickerson et al., 2013) aims to demonstrate the practical applicability of the suggested taxonomy and to enhance its usefulness for regulatory authorities. For this final step, all project team members participated together in a structured session to collaboratively apply the proposed taxonomy to two selected social media platforms, discussing the assessments to reach a consensus and refine the taxonomy.

The selection of the two platforms – TikTok and Instagram – is based on their relevance in terms of the number of adolescent users. Until October 2025, **TikTok** had approximately 2 billion monthly active users worldwide (Statista, 2025), with two-third of users (66%) aged 18–34 (Dreamgrow, 2025b). Since its launch in 2016 by ByteDance, a tech company headquartered in China, the video-sharing platform has been rapidly growing into one of the most popular social media apps. **Instagram** has reached 3 billion monthly active global users (Statista, 2025), with 62.1% of users aged between 18 and 34 (Dreamgrow, 2025a). Introduced in 2010 and later acquired by Meta Platforms, Inc., based in the United States, Instagram has evolved from a photo-sharing application to a multi-modal social media platform that has progressively integrated new features such as stories and reels. In 2025, TikTok and Instagram were among the most important apps for young people in Germany, with 54% and 62% of 12 to 19 year olds reporting frequent usage (Medienpädagogischer Forschungsverbund Südwest, 2025). Similarly, in Austria, TikTok and Instagram ranked among the most widely used social media platforms by young people aged between 11 and 17, with overall usage rates of 72% and 73% (Austrian Safer Internet Centre, 2025). Taken altogether, these two cases, a US-based and a China-based platform, allow for a comprehensive analysis of addictive design strategies and practices across distinct corporate, regional, and technological contexts, making them particularly relevant exemplary instances for validating and evaluating the taxonomy of addictive risks.

The case studies were conducted on 18 and 19 November 2025 by all four project members. Both cases were investigated in their app version only, in alignment with its most common use. The taxonomy was simultaneously applied to the two Apps (on iPhone for TikTok and Android device for Instagram) to enable comparison and discussions over features independent from the specific platforms. Both apps were tested in their pre-installed versions, which may have affected certain default settings, since the newly installed app version of TikTok revealed

different features on the initial log-in screens. The analysis followed a walkthrough-oriented workflow documented through screenshots, beginning with the registration of a new account and ending with the deletion of the account. The test account was given adult-age, mirroring likely usage settings. Throughout this process, selected features were reordered, merged, or refined to improve clarity and enhance the accuracy of the classification. In applying the taxonomy, typically one could answer the questions using only the app, however, sometimes information regarding the manner in which the platform operates cannot be found on the app itself, but outside of it, in other official documents such as the platforms' terms of service (e.g. in the case of personalisation or influencer logics).

3 Identification and Classification of Addictive Risks on Social Media Platforms

3.1 Logics

Table 2. Addictive Logics with Corresponding Features

Logics	Features	Definitions	Literature
Forced Action	Forced enrolment; Autoplay; Nudged notifications and alerts; Hard to exit;	A logic that limits user choice and implicitly steers user behaviour towards predictable actions that primarily serve platforms interests, resulting in sustained attention and habitual engagement.	Beltrán, 2025; Li et al., 2024; Gray et al., 2024; Yeung, 2016; Richards 2025
Permanent Usability	Seamless access across platforms; Context recovery	A logic that encourages constant user connectivity with the platform and its content, through real-time continuous access to content and ease of reengaging with previously viewed content via intuitive and immersive design features.	Bojic et al., 2024; Granda et al., 2025
Gamblification	Fresh content cycles; Infinite scroll; Completion indicators	A logic inspired by gambling that engage users and maintains their concentration and curiosity through “ludic loops” or repetitive cycles of uncertainty that promise possible satisfactory outcomes but grant them in an unpredictable manner, frequency, and of varying qualities, creating the habit of repetitive engagement in hopes of being rewarded.	Beltrán, 2024; Berry, 2025; Beltrán, 2025
Self-Expression	Incentives for content creation; Online presence	A logic that encourages users to strategically curate their self-presentation and to regulate how others perceive them and their popularity and social value online through the creation of content and customisation of the personal account or online profile.	Alutaybi et al., 2018; Granda et al., 2025
Engineered Social Connection	Social connectors; Social networking; Real-time chats; Tags; Social interaction; Quantified social engagement; Social monitoring;	A logic that addresses and benefits from users' fundamental needs and desires for social connection and participation, transforming the need for social interaction and reciprocity into a loop of validation-seeking, therefore sustaining continuous user engagement, locking users in, and creating dependency on the platform for social interactions.	Susser & Malgieri, 2025; Beltrán, 2025

(Hyper)Personalisation	Bots; Recommendations	A logic that extracts and analyses user past data to deliver personalised interactions and tailored content and utilizes predictive algorithms to anticipate future behaviours or preferences and steer them toward decisions that are beneficial for the company.	Nie, 2025; Montag, 2025; Faraoni, 2023; Flayelle et al., 2023; Granda et al., 2025
Temporal Structuring	Live streaming; Temporal information; Temporal action; Real-time updates; Exclusive access	A logic that coerces user into engagement through time-sensitive cues and pacing strategies including fabricated urgency, scarcity, relevance, and continuity in content interaction, delivery and scheduling, creating timely pressure to act or respond.	Beltrán, 2025; Granda et al., 2025
Gamification	Rewards; Streaks; Digital Pets	A logic that aims to elicit states of deep concentration and absorption or "flow", in which the users lose self-awareness and track of time through game-based mechanics and aesthetics that increase engagement, competition, and social comparison, while promising enjoyment and fun.	Andrade, et al., 2016; Beltrán, 2025; Granda et al., 2025
Influencer	Monetisation	A logic that recruits content creators into the attention-economic profit-oriented logic of the platform, by enabling and encouraging them to align their content with addiction-generating practices, trapping them into a multi-sided dependent relation. Influencers are dependent on the platform for their income and are further creating dependencies for their followers through bond-based attachments (parasocial relationships) and identity-based attachments (sense of belonging to influencer community).	Farivar et al., 2022

3.2 Features and Examples

Table 3. Addictive Features with Corresponding Examples

Logics	Features	Examples	Definitions	Literature
Forced Action	**Forced enrolment**	Mandatory registration	Design features that require users to sign up, sign in, or link personal accounts before accessing core services, features, or content.	Shi et al., 2025
	Autoplay	Autoplay; Autoscroll	Design features that automatically play media content such as video without user intervention, upon opening the interface, endlessly looping or scrolling to the new content at the end of content until user action is taken.	Harris, 2019; Mildner et al., 2023; Montag et al., 2019; Rafael et al., 2025
	Nudging notifications and alerts	Push notifications; Ghost/Phantom notifications; Auditory or visual responses	Design features that proactively trigger users to re-engage through related or irrelevant visual, auditory, and informational cues, such as notifications, alerts, reminders or indicators, without user initiation.	Center for Humane Technology, 2021; Iyer & Zhong, 2022; Granda et al., 2025
	Hard to exit	Roach motel; Hard to log out; Hard to delete/Immortal accounts	Design features that make it easy to register, log in or open an interface but difficult to log out, deactivate, delete an account, or exit the interface.	Brignull, 2010; Bösch et al., 2016; Shi et al., 2025
Permanent Usability	**Seamless access**	Cross-platform access; Cloud sync/Cross-devices connectivity; QR log-in	Design features that ensure uninterrupted and frictionless access to platforms across multiple devices and contexts by syncing accounts, interfaces, and content with updated data flow.	Granda et al., 2025
	Context recovery	Bookmark/Save; History/Archive/ Memory	Design features that encourage users to invest time and effort into a collection of content, and to quickly re-engage and frequently re-visit it through bookmarking or archive functions.	Good, 2013; Belk, 2013; Granda et al., 2025; Eyal, 2019

Gamblification	**Fresh content cycles**	Pull-to-refresh	Design features that suggest users to refresh media content so that they can immediately receive an unpredictable outcome, either a rewarding or unrewarding piece of content, reinforcing repeated engagement.	Rafael et al., 2025
	Infinite scroll	Endless scrolling	Design features that continuously load new content as users reach the bottom of the page or feed, removing natural stopping cues and creating an unbounded stream of information or media.	Rafael et al., 2025
	Completion indicators	Collections; Progress bars	Design features that prolong user engagement through visual indicators of progress or a set of tokens to be collected.	Zagal et al., 2013; Beltrán, 2025
Self-Expression	**Incentives for content creation**	Posting content; Creation suggestions; Notes; Status; Location	Design features that prompt or guide users to strategically produce content including texts, photos, videos, and locations, often by providing templates, prompts, or tools that facilitate self-expression.	Beltrán, 2025; Granda et al., 2025
	Online presence	Customisable user profile; Profile picture; Avatars	Design features that enable users to create, manage, and identify with their online presentation through customisable personal pages or virtual personas.	Belk, 2013; Cemiloglu, 2021; Rafael et al., 2025
Engineered Social Connection	**Social networking**	Suggestions; Friends; Groups	Design features that lead users to develop and maintain social relationships and networks on the platforms through visible connections.	Alutaybi et al., 2018; Hajarian et al., 2019
	Social connectors	Social pyramid; Friend spam; Address book leeching	Design features that prompt or pressure users to import contacts, invite friends, or connect with other users, often presented as beneficial, rewarding, or necessary for full functionality.	Bösch et al., 2016; Mildner et al., 2023; Shi et al., 2025; Beltrán, 2025
	Real-time chats	Real-time messaging; Delivered; Seen; Typing awareness indicator (wavy dots)	Design features that encourage users to engage in real-time, immediate and responsive conversation that normalizes constant availability and attention through visible indicators of presence and responsiveness.	Alutaybi et al., 2018; Granda et al., 2025; Rafael et al., 2025

	Tags	Hashtags	Design features that enable users to express personal or collective identity, values, or affiliations through tags, labels, or symbolic signals.	Flayelle et al., 2023
	Social interaction	Likes; Comments; Reposts; Tagging/Mentioning; Share/Repost/Send	Design features that encourage users to interact and engage with other users through visible reactions, metrics, interactive communication, and content circulation among users.	Greiner, 2009; Alutaybi et al., 2018; Mujica et al., 2022; Rafael et al., 2025; Ye, 2025
	Quantified social engagement	Number of likes; Comments; Reposts; Views	Design features that quantify popularity and social value through reputational metrics such as number of likes, views, retweets, or follower counts.	Alutaybi et al., 2018; Granda et al., 2025
	Social monitoring	Audience management; Geo-location; Online status	Design features that make users aware of the presence of others on the platform, encourage users to monitor and interact with others through audience management and other online activity trackers.	Alutaybi et al., 2018; Granda et al., 2025
(Hyper) Personalisation	**Bots**	Chatbots; Virtual AI assistants	Design features that encourage users to over-involve with and potentially develop attachments to AI assistants through personalised responses, availability, and immediacy.	Flayelle et al., 2023
	Recommendations	Recommendations/ Suggested content; For you feed/Algorithmic feed; Engineered content ranking	Design features that personalise the user experience by suggesting content, connections, or activities based on data collection through overt or covert recommendations, algorithmically curated feeds, or content ranking.	Ntalianis et al., 2015; Flayelle et al., 2023; Granda et al., 2025; Beltrán, 2025
Temporal Structuring	**Live streaming**	Live streaming; Real-time communication	Design features that encourage real-time content creation and interactions, through video broadcasting and live chat functions.	Zhang & Li, 2022; Granda et al., 2025;
	Temporal information	Disappearing messages; Time-limited content; Stories/Limited availability content; Temporal events	Design features that leverage artificial scarcity to trigger users fear of missing out on temporarily available information, motivating frequent engagement and reinforcing habitual checking behaviours through disappearing content and temporal notifications.	Alutaybi et al., 2018; Granda et al., 2025; Puspitasari & Lee, 2022; Esposito & Ferreira, 2024

	Temporal action	Timers/Countdown	Design features that create temporal pressure by emphasizing urgency and importance, prompting users to act promptly, return regularly, and engage more consistently with the platform, through countdown timers, scheduled content releases, and time-tracking metrics.	OECD, 2022; Granda et al., 2025
	Real-time updates	Trending; Real-time updates	Design features that draw users' attention to content identified as having a high reputation or timely relevance, through real-time labels and categories.	Alutaybi et al., 2018; Cao et al., 2020; Granda et al., 2025
	Exclusive access	Premium accounts/ Membership	Design features that instate fear of missing out in users and encourages engagement maximisation by restricting accessibility to some content and features to collect a monthly fee for access.	Granda et al., 2025
Gamification	**Rewards**	Scores; Ranking; Badges	Design features that encourage competition among users, and foster social comparison, concentration, enjoyment, and fulfilment through rating, ranking, and rewarding users' activities with symbolic tokens.	Andrade et al., 2016; Hajarian et al., 2019
	Streaks	Friend streaks; Activity streaks	Design feature that aid habit formation, engages, and pressures users to produce or distribute content (daily) regularly, through reinforcement in the form of rewards and penalties.	Rafael et al., 2025; Mujica et al., 2022
	Digital pets	Streak pet; Virtual pet	Design features that aid habit formation and reinforce daily engagement by introducing a virtual companion or entity that users must regularly interact with, nurture, or maintain.	Fogg, 1998
Influencer	**Monetisation**	Creators/Revenue fund; Creators academy; Subscription options; Incentives for brand partnerships; Gift giving on livestream; Virtual/Intermediate currency; Third party advertisement	Platform functions and offers that enable users to grow their audience along the logics of the attention economy and monetise their content by offering direct payments, or infrastructures connecting the influencers with third-parties or users.	Farivar et al., 2022; Khandelwal & Raj, 2024; Gray et al., 2018; Luguri et al., 2021; Li & Peng, 2021; Beltrán, 2025

4 Risk Taxonomy to Assess Addictive Design Practices

Table 4. Risk Taxonomy: Addictive Design Practices

Logics	Features	Questions			
Forced Action	Forced enrolment	Is an account mandatory to access the content on the platform and are/or users suggested to create an account (when attempting to view content)?	No, all the content is accessible without an account, and users are not asked to register.	Yes, none of the content is accessible without an account, and users are asked to register.	Yes, only a preview/selection of the content is accessible without an account, and users are asked to register.
	Autoplay	Do videos start playing automatically?	No.	Yes, and users can turn it off within the video or in the settings.	Yes, and users cannot turn it off.
		Do videos loop or scroll automatically after ending?	No.	Yes, and users can turn it off within the video or in the settings / Yes, but only partially (e.g. if the video is short or if content creators decided so).	Yes, and users cannot turn it off.
	Nudged notifications and alerts	Does the app use in-app notifications and alerts by default?	No.	-	Yes.
		Does the app ask users to allow push-notifications on the phone?	No.	-	Yes.
		Does the app use phantom push notifications and alerts (e.g. does the info in the notification not match an actual activity on the platform)?	No.	-	Yes.

		Does the app use auditory or visual responses (e.g. number of unread messages) for notifications?	No.	-	Yes.
	Hard to exit	Is the process of logging out accompanied by alternative suggestions?	No.	-	Yes, e.g. to switch to other accounts.
		When users try to delete their account, is the default/preselected mode to deactivate it first?	No.	-	Yes.
Permanent Usability	Seamless access	Are users suggested the option to link their account with other accounts on platforms?	No.	-	Yes, e.g. to register with a Google-Account or to link the Instagram-profile with another Meta-profile.
		Are users offered options that facilitate switching between devices (e.g. through providing a QR-Code)?	No.	-	Yes.
	Context recovery	Are users offered the option to bookmark/favourite/save content?	No.	-	Yes.
		Are users offered the option to visit their activity history (e.g. videos they watched/liked)?	No.	-	Yes.
Gamblification	Fresh content cycles	Can users pull down to refresh?	No.	-	Yes.
	Infinite scroll	Is it impossible for users to reach the end of the feed/content page?	No.	-	Yes.
	Completion indicators	Are there progress bars or visual indicators of progress to be completed?	No.	-	Yes.
Self-Expression		Are there tools or options that facilitate and assist the creation of content (e.g. built-in	No.	-	Yes.

	Incentives for content creation	videorecorder, filter, music library, filters, AI)?			
		Apart from content, are there suggestions or incentives to share notes, statuses, thoughts, or location?	No.	-	Yes.
	Online presence	Are users encouraged to customise their personal page or profile (e.g. profile picture, avatar, short bio, create a first post/story)?	No.	-	Yes.
Engineered Social Connection	Social networking	Can users befriend or follow other users?	No.	-	Yes.
		Are other users suggested to you assuming you may know or be interested in them?	No.	Yes, when signing up.	Yes, on a regular base.
		Can users form group chats with other users?	No.	-	Yes.
	Social connectors	Are users suggested to sync contacts or invite friends?	No.	Yes, when downloading the app.	Yes.
		Are users suggested to connect with friends (e.g. through sharing content or inviting friends)?	No.	-	Yes.
	Real-time chats	Can users contact other users through instant messaging?	No.	Yes, but it can be restricted to friends.	Yes.
		Are there indicators that messages were read set as default?	No.	Yes, but users can turn it off.	Yes.
		Are there indicators that messages are being typed by another user set as default?	No.	Yes, but users can turn it off.	Yes.

	Tags	Can users apply hashtags to label or track content?	No.	-	Yes.
	Social interaction	Can users like, comment, repost, or share other user's posts?	No.	-	Yes.
		Can users tag or mention other users in their posts or comments?	No.	-	Yes.
	Quantified social engagement	Is users' own content quantified by engagement metrics (e.g. how many likes, comments, repost, views, or followers users or their content have)?	No.	Yes, but users can choose to hide them from themselves.	Yes.
		Are there quantified engagement metrics of other users visible (e.g. how many likes, comments, repost, views, or followers users or their content have)?	No.	Yes, but users can choose to hide them from themselves.	Yes.
	Social monitoring	Are users offered the option to manage the audience of their content (e.g. through privacy options, blocking, or close friends)?	No.	-	Yes.
		Is it visible when users are online by default?	No.	-	Yes.
		Are users encouraged to share their geo-location?	No.	-	Yes.
(Hyper) Personalisation	Bots	Can users talk to a generative AI assistant or chatbot on the app?	No.	-	Yes.
	Recommend-ations	Are users being presented content from accounts they do not follow?	No.	-	Yes.
		Does the platform provide personalised/customised recommendations of content?	No.	Yes, but users can turn it off.	Yes.

		Is the primary content in the feed/main page/video page from accounts users do not follow?	No.	Yes, but users can turn it off.	Yes.
Temporal Structuring	Live streaming	Are users encouraged to create or join livestreams on the app?	No.	-	Yes.
	Temporal information	Can users post content of limited temporal availability (e.g. 24h story, 1-10 seconds snap)?	No.	-	Yes.
		Can users send messages of limited temporal availability?	No.	-	Yes.
	Temporal action	Can users create and share countdown timers or event reminders (e.g. in stories, posts or chats)?	No.	-	Yes.
	Real-time updates	Is some content/sounds/topics labelled as 'trending'?	No.	-	Yes.
	Exclusive access	Can users pay for a membership on the app to access additional features (e.g. no ads, AI)?	No.	-	Yes.
Gamification	Rewards	Are users rewarded for their popularity on the app (e.g. through badges or being ranked)?	No.	-	Yes.
	Streaks	Are users penalised (e.g. losing streak) if they do not engage sufficiently (e.g. sharing content/messages with friends) on the platform?	No.	-	Yes.
	Digital pets	Are users encouraged to complete tasks to maintain the wellbeing of a digital pet or otherwise they will encounter negative	No.	-	Yes

		consequences (e.g. pet freezes, cries, or dies)?			
Influencer	Monetisation	Does the platform offer a fund or revenue program for creators?	No.	-	Yes.
		Does the platform encourage creators to grow their audience (e.g. through tools, tips, advice, or creator's academy)	No.	-	Yes.
		Can users pay for a subscription for exclusive content from creators?	No.	-	Yes.
		Does the platform encourage creators to collaborate with brands for paid partnerships (e.g. through offering tips or marketplace).	No.	-	Yes.
		Can users send gifts to creators on livestreams or reels that can be turned into earnings?	No.	-	Yes.
		Is a virtual currency necessary for purchasing gifts for creators (purchased with real money)?	No.	-	Yes.
		Can creators opt-in for having third-party advertisements added to their content and getting revenue for that?	No.	-	Yes.

5 Case Studies: TikTok and Instagram

Table 5. Risk Taxonomy: Case Studies

Logics	Features	Questions			
Forced Action	Forced enrolment	Is an account mandatory to access the content on the platform and are/or users suggested to create an account (when attempting to view content)?	No, all the content is accessible without an account, and users are not asked to register.	Yes, none of the content is accessible without an account, and users are asked to register.	Yes, only a preview/selection of the content is accessible without an account, and users are asked to register.  
	Autoplay	Do videos start playing automatically?	No.	Yes, and users can turn it off within the video or in the settings.	Yes, and users cannot turn it off.  
		Do videos loop or scroll automatically after ending?	No.	Yes, and users can turn it off within the video or in the settings / Yes, but only partially (e.g. if the video is short or if the content creators decided so). 	Yes, and users cannot turn it off. 
	Nudged notifications and alerts	Does the app use in-app notifications and alerts by default?	No.	-	Yes.  

		Does the app ask users to allow push-notifications on the phone?	No.	-	Yes.  
		Does the app use phantom push notifications and alerts (e.g. does the info in the notification not match an actual activity on the platform)?	No.  	-	Yes.
		Does the app use auditory or visual responses (e.g. number of unread messages) for notifications?	No.	-	Yes.  
	Hard to exit	Is the process of logging out accompanied by alternative suggestions?	No. 	-	Yes, e.g. to switch to other accounts. 
		When users try to delete their account, is the default/preselected mode to deactivate it first?	No. 	-	Yes. 
Permanent Usability	Seamless access	Are users suggested the option to link their account with other accounts on platforms?	No.	-	Yes, e.g. to register with a Google-Account or to link the Instagram-profile with another Meta-profile.  
		Are users offered options that facilitate switching between devices (e.g. through providing a QR-Code)?	No. 	-	Yes. 

	Context recovery	Are users offered the option to bookmark/favourite/save content?	No.	-	Yes. 
		Are users offered the option to visit their activity history (e.g. videos they watched/liked)?	No.	-	Yes. 
Gamblification	Fresh content cycles	Can users pull down to refresh?	No.	-	Yes. 
	Infinite scroll	Is it impossible for users to reach the end of the feed/content page?	No.	-	Yes. 
	Completion indicators	Are there progress bars or visual indicators of progress to be completed?	No.	-	Yes. 
Self-Expression	Incentives for content creation	Are there tools or options that facilitate and assist the creation of content (e.g. built-in videorecorder, filter, music library, filters, AI)?	No.	-	Yes. 
		Apart from content, are there suggestions or incentives to share notes, statuses, thoughts, or location?	No.	-	Yes. 
	Online presence	Are users encouraged to customise their personal page or profile (e.g. profile picture, avatar, short bio, create a first post/story)?	No.	-	Yes. 

Engineered Social Connection	Social networking	Can users befriend or follow other users?	No.	-	Yes.
		Are other users suggested to you assuming you may know or be interested in them?	No.	Yes, when signing up	Yes, on a regular basis.
		Can users form group chats with other users?	No.	-	Yes.
	Social connectors	Are users suggested to sync contacts or invite friends?	No.	Yes, when downloading the app.	Yes.
		Are users suggested to connect with friends (e.g. through sharing content or inviting friends)?	No.	-	Yes.
	Real-time chats	Can users contact other users through instant messaging?	No.	Yes, but it can be restricted to friends.	Yes.
		Are there indicators that messages were read set as default?	No.	Yes, but users can turn it off.	Yes. **Instagram users can turn them off for each individual chat one by one.*

		Are there indicators that messages are being typed by another user set as default?	No.	Yes, but users can turn it off.	Yes.
	Tags	Can users apply hashtags to label or track content?	No.	-	Yes.
	Social interaction	Can users like, comment, repost, or share other user's posts?	No.	-	Yes.
		Can users tag or mention other users in their posts or comments?	No.	-	Yes.
	Quantified social engagement	Is users' own content quantified by engagement metrics (e.g. how many likes, comments, repost, views, or followers users or their content have)?	No.	Yes, but users can choose to hide them from themselves.	Yes.
		Are there quantified engagement metrics of other users visible (e.g. how many likes, comments, repost, views, or followers users or their content have)?	No.	Yes, but users can choose to hide them from themselves.	Yes.
	Social monitoring	Are users offered the option to manage the audience of their content (e.g. through privacy options, blocking, or close friends)?	No.	-	Yes.
		Is it visible when users are online by default?	No.	-	Yes.

					
		Are users encouraged to share their geo-location?	No. 	-	Yes. 
(Hyper)Personalisation	Bots	Can users talk to a generative AI assistant or chatbot on the app?	No.	-	Yes.  
	Recommendations	Are users being presented content from accounts they do not follow?	No.	-	Yes.  
		Does the platform provide personalised/customised recommendations of content?	No.	Yes, but users can turn it off. 	Yes. **Instagram users can only turn it off for 30 days.* 
		Is the primary content in the feed/main page/video page from accounts users do not follow?	No. 	Yes, but users can turn it off.	Yes. 
Temporal Structuring	Live streaming	Are users encouraged to create or join livestreams on the app?	No.	-	Yes.  
	Temporal information	Can users post content of limited temporal availability (e.g. 24h story, 1-10 seconds snap)?	No.	-	Yes.  

		Can users send messages of limited temporal availability?	No. 	-	Yes. 
	Temporal action	Can users create and share countdown timers or event reminders (e.g. in stories, posts or chats)?	No.	-	Yes.  
	Real-time updates	Is some content/sounds/topics labelled as 'trending'?	No. 	-	Yes. 
	Exclusive access	Can users pay for a membership on the app to access additional features (e.g. no ads, AI)?	No. 	-	Yes. 
Gamification	Rewards	Are users rewarded for their popularity on the app (e.g. through badges or being ranked)?	No.  	-	Yes.
	Streaks	Are users penalised (e.g. losing streak) if they do not engage sufficiently (e.g. sharing content/messages with friends) on the platform?	No. 	-	Yes. 
	Digital pets	Are users encouraged to complete tasks to maintain the wellbeing of a digital pet or otherwise they will encounter negative consequences (e.g. pet freezes, cries, or dies)?	No. 	-	Yes. 
Influencer	Monetisation	Does the platform offer a fund or revenue program for creators?	No. 	-	Yes. 

		Does the platform encourage creators to grow their audience (e.g. through tools, tips, advice, or creator's academy)?	No.	-	Yes. TikTok Instagram
		Can users pay for a subscription for exclusive content from creators?	No.	-	Yes. TikTok Instagram
		Does the platform encourage creators to collaborate with brands for paid partnerships (e.g. through offering tips or marketplace)?	No.	-	Yes. TikTok Instagram
		Can users send gifts to creators on livestreams or reels that can be turned into earnings?	No.	-	Yes. TikTok Instagram
		Is a virtual currency necessary for purchasing gifts (purchased with real money)?	No.	-	Yes. TikTok Instagram
		Can creators opt-in for having third-party advertisements added to their content and getting revenue for that?	No. TikTok Instagram	-	Yes.

Total: 55 Questions

TikTok	**TikTok**	9	2	44
Instagram	**Instagram**	10	5	40

6 Conclusion

The project provides a systematic categorisation of addictive design features and logics of the most frequented social media platforms for young persons in the European Union, namely TikTok, Instagram, Snapchat, and YouTube. The purpose of the provided taxonomy is to identify elements that contribute to addictive design on digital platforms. The expected application of the taxonomy lies in the field of consumer protection. It is recommended that the taxonomy is applied in collaboration with users who are already familiar with the apps' functions and settings.

Methodologically, we conducted a systematic literature review with 270 sources published between 1998 and 2025. Out of the dataset we extracted 9 logics and 29 features that were operationalised in a traffic light taxonomy system encompassing 55 questions. Our two case studies on the social media platforms TikTok and Instagram revealed that the majority of features on both platforms were classified as high-risk, indicating that these platforms are heavily designed to engage users in ways that may foster compulsive or prolonged use. In concrete terms, out of 55 questions operationalizing 29 addictive design features TikTok exhibited 9 low-risk, 2 medium-risk and 44 high-risk elements, while Instagram exhibited 10 low-risk, 5 medium-risk, and 40 high-risk elements. This **concentration of high-risk features** underscores the intensity and pervasiveness of design strategies in contemporary social media that seek to maximize user engagement.

The classification of features into high-, medium-, and low-risk categories makes it possible to analyse a platform's overall profile and to systematically assess its potential for promoting addictive behaviour, providing an evidence-based foundation for regulatory and ethical debates. However, since digital platforms are constantly evolving and introducing new features – with Facebook's internal motto "move fast and break things" exemplifying this dynamic (Taplin, 2017) –, and new emerging platforms can rapidly gain popularity, establishing a definitive and comprehensive and up-to-date classification of addictive design strategies remains challenging (Beltrán, 2025). Therefore, there is a continuous need to update and revise the taxonomy regarding newly introduced addiction-promoting features and logics, and to potentially reconsider concepts that were previously excluded. Lastly, it is important to recognize that a platform's addictive potential is shaped not only by the number of addictive features, but more so by the broader user experience, produced by the seamless interaction of logics and features.

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8 Appendix

Keyword list for literature review collection

Primary keywords	**Additional keywords**
Addictive design	Digital addiction
Dark patterns	Social media addiction
Choice architecture	Internet addiction
Persuasive design	Hypernudge
Desire engine	Nudge theory
Captology	Digital nudging
	Hooked model
	Addictive feature
	Dopamine cycle
	Dopamine-related reinforcement
	Addiction reinforcement cycle
	Gamification
	Persuasive technology
	Problematic internet use
	Problematic social media use
	Attention economy
	Digital dependency

Table 6: Risk Matrix of Individual Features

	Likelihood of exposure to the feature					
Effort required[1] for risk avoidance or mitigation		Feature is not present (No probability of encountering it)	Present as a side feature and not on the main page (Low probability of encountering it)	Present as a side feature on the main page (Medium probability of encountering it)	Present as a core feature and not on the main page (High probability of encountering it)	Present as a core feature and on the main page (Very high probability of encountering it / Impossible to avoid)
	Off by default (No effort required to mitigate)	**Low Risk**	**Low Risk**	**Low Risk**	**Low Risk**	**Low Risk**
	On by default and can be turned off easily (Low effort required to mitigate)	**Low Risk**	**Medium Risk**	**Medium Risk**	**Medium Risk**	**Medium Risk**
	On by default and difficult to turn off (Effort required to mitigate)	**Low Risk**	**Medium Risk**	**High Risk**	**High Risk**	**High Risk**
	On by default and difficult to notice and to turn off (High effort required to mitigate)	**Low Risk**	**Medium Risk**	**High Risk**	**High Risk**	**High Risk**
	Cannot be turned off (No possibility to mitigate)	**Low Risk**	**Medium Risk**	**High Risk**	**High Risk**	**High Risk**

[1] How resource-intensive the mitigation is, e.g. in terms of time, personnel, knowledge, money.

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